SPATIO TEMPORAL VARIATION IN RESIDENTIAL LAND VALUES OF BAHAWALPUR CITY FROM 1998-2013

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ABSTRACT

In urban geography, land value is a significant feature of a study in which the stress is put mainly on spatial analysis. Land values are not evenly distributed in urban areas. The current study is focused on the changes in the residential land values in Bahawalpur City. In the past Bahawalpur was a walled city with the different residential Muhalla bordered by the bazaars which also serving as residential areas in the core of the city but later on due change in its population due to natural increase and rural-urban migration city start to expand its boundaries. The current study is based on the primary data source presented on a micro-level. Primary data is categorized as observed values taken from the inhabitants and property dealers. The trend of variation in land values is observed by applying the trend line analysis while the graphical representation of the data is also given to view the changes in residential land values for the last fifteen years. Moreover, the mapping is also done to give a clear picture of changes in land values in Bahawalpur City. The changes in the residential land values are governed by the location of the layout of their streets, distance from the main road, population pressure, congestion, and the accessibility of residential areas. Further studies can be made on the same ground by focusing on the change in the commercial land values of the walled city.

KEYWORDS: Land Value, Land use, Residential Areas, Location, Accessibility.

INTRODUCTION

The stage on which all anthropogenic activities are conducted is termed as land. The land provides opportunities for human beings to perform all the activities of their daily life. All over the world, there is a marked difference in land use in terms of residential, commercial, or agricultural.

Home prices are directly proportional to the land prices which may affect the market of property. Building ingredients play a vital role in income and services related to the dwelling. The location of home, land, and services has an impact on prices (Davis & Palumbo, 2006). Land values have linked with the development of the labor market as well as a spatial and urban structure, and economics (Albouy & Ehrlich, 2012). The fundamental indicator of area attractiveness is the prices of vacant land in urban areas. (Haughwout et al., 2008). Every type of activity needs land directly or indirectly i.e. housing, industries, construction, and farming (Nichols et al., 2009). Expansion and continuous growth of cities put pressure on the land of the urban area. Low and middle classes families cannot afford the high

prices, which ultimately leads to slum and informal settlement. However, the growth rate of Asia is more than the other parts of the world in the last few decades   (Majale et al., 2011).

Punjab province is facing problems to manage the expansion of cities without having uniform policies for housing structure because the urban transition is rapidly increasing with an uncontrolled rate. These are major challenges for the local and provincial governments at large.

(Dowall & Ellis, 2007) . Restrictive environment for the establishment of land and dwelling coupled with Punjab's high rates of urban growth caused a price hike in urban infrastructure, due to which price affordability has badly affected. (Ellis et al., 2006). The price of land is the image of the value of the land which can be changed by the utilization of land because builder create opportunities for the welfare of the population and earns profit (Lee, 2002). Land and house prices can be changed due to real estate marketing (Glindro et al., 2011). Location of land and walkability to civic services have a great impact on land values because of the neighborhood of land i.e. amenities, school, offices, etc.   (Rauterkus & Miller, 2011).

Pakistan is one of the densely populated countries all over the world. The change in population structure is responsible for residential land-use changes in the country. As the population pressure increases the demand for more and more land to provide the residence is increases. As compared to the other provinces of Pakistan the population pressure in Punjab is very high. In Pakistan, the Punjab Province has densely populated hence the demand for residential land use is very high as compared to the other areas of Pakistan.

REVIEW OF LITERATURE

In urban areas, the urban land values are not uniformly distributed. In any urban center, the area having the maximum facilities will have the highest land values either it is the residential land value or commercial land value. While moving away from the city center the land values tend to decrease however this decrease is not uniform. The trend of increase and decrease in land values depends upon many factors. There are several factors that determine the land values e.g. accessibility of the road network, distance from the core or city center, population density, relative location of the area, physical characteristics of the area, and Governmental Policies. Land values of any area can be determined with the help of land use. Land use has a significant impact on determining the course of land and ultimately land values and vice versa. The most important factor that determines the value of land is its location. The urban land values are primarily influenced by location. The urban land with having a prime location is referred to have an optimum land value. In a city center if a location has the highest land value and all other sites that are located in a periphery of that location

may have the land value that will be fractionally less than of that location. In this case, the land with the highest land value will be referred to as "Hundred Percent Location or may be referred to as Peak Value Intersection", simply means that the land with the highest land value (Northam, 1978). The bid rent theory also suggests that land values tend to decrease as the distance from the city center increases. Another important factor that determines the land values is accessibility. According to this, the maximum accessibility is usually observed in the city center that's why the land values in the city center are very high. These land values tend to decrease as accessibility decreases. In the core of the city, roads are converged due to this convergence the accessibility increased which results in the increase in land values. Similarly, the road intersection points that are accessible to the other areas of the city along the single traffic route also having high land values (Fellman & Getis, 1990). The term land value is generally referred to the assessed value which does not include the value of infrastructure of the particular piece of land. The intensity of land use is determined by the land value of that particular area (Murphy, 1996). In some cities of the world, the pattern of land values distribution has been changed due to the development of many sub-centers in the cities. The morphology of the cities has been from monocentric to polycentric. Examples of such cities are Los Angles and Chicago. In these cities land values are not only on higher in the center of the city but towards the sub-centers. In these cities, land values tend to increase towards the sub-centers (McMillen, 1996).Another study also supports the fact that land values tend to decrease as we move away from the central business district. In Jakarta, the spatial pattern of land values was observed in 2000. From the study, it was concluded that the distance from the central business districts is an important factor in shaping the patterns of land values (Han & Basuki, 2000). Another study was carried to in Bahawalpur City to examine the pattern of land values in the central commercial area of the city. The study was addressing the two basic concepts of land values that have a significant impact in changing the course of land values. The first assumption was as the distance from the city center increases while the second assumption was the land values tend to increase as the intensity of land use increases (Noor, 2005). A study was conducted in China to understand the impact of land policy and the relationship between the land and housing prices. In this study, it was concluded that there strong relationship in the housing markets of China between the land price and housing price. It was observed by using the data set of different cities that here is streamline equilibrium between the land markets and Chinese Urban Housing (Du et al., 2011). Urban land values are also affected by the control of urban land use. Urban land use has a positive, negative, and may have a neutral impact on land values

(Boamah, 2013). In determining the housing and land price economic fundamentals are the prime factors on the city level but to some extent, the relationship between the land price and housing price is not understandable. There is an endogenous relationship between the land price and housing price of any area and housing price has a significant impact on the land price (Wen & Goodman, 2013). In China, the Government is trying to control the areas that are declared but not having a legal status yet in housing markets particularly in urban areas (Zhang et al., 2013). Land values are also closely related to the pattern of the road network, layout of streets, and the width of roads. Generally, the residential land values are based on the location and distance from the city center. As the distance from the city center increases the residential land values decreases. In case of current study, the research area is the high, middle- and low-class residential area of the city.

METHODOLOGY

The current study is based on primary data collection. The information regarding the land values is acquired from the inhabitants and property dealers. [1]Trend line analysis is performed to identify the change in residential land values. Primary data is also represented with the help of graphs along with the change in the percentage of residential land values from 1998-2013 is also calculated. Change in percentage is also helpful in understanding the rate of change in residential land values of any area. Residential land values are categorized into three main classes' i.e. high class, middle class, and low-class residential area. These categories are based on residential land values ranging from 1998 to 2013 as shown in the maps.

STUDY AREA

The research area is located in the Southern Punjab i.e. is the Bahawalpur. The Bahawalpur City is situated almost in the center of the country on the eastern border at an elevation of 152 meters above the mean sea level. Till 1940, the characteristic of the medieval type of city was possessed by the Bahawalpur. Basically, the city is a combination of traditional bazaar-based city and of South Asia and colonial influenced zonal based city like many other cities of Pakistan. There is a marked difference between the layout, structure form, and land use in different parts of the city. With the passage of time, the population structure of the city has been changed due to natural increase and net migration. According to the population census of

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[1] The trend line is also known as "Dutch Line" as it was first used in Holland. A trend line is a diagonal line which is generally formed between two or more than two price pivot point.

Pakistan 2017, the total population of Bahawalpur City was 783,349 (Punjab, 2017)
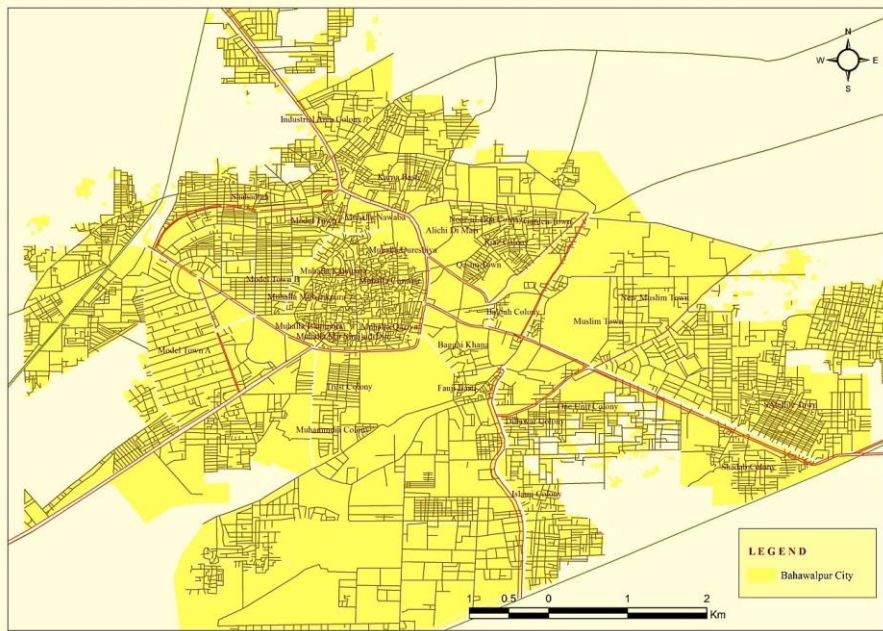

Figure 4: Study area-Bahawalpur city
Source: Author 2014

RESULTS AND DISCUSSION

The residential land values in the different zones of core cities have been changed significantly in the last 15 years. The residential land values in high-class residential areas of Bahawalpur City from 1998 to 2013 are shown in the graph. Among these areas Model Town, A has the highest residential land values in 2013 i.e. 1200000 Rs. /Marla while the rest of the areas have residential land values, ranges between 500000 Rs. /Marla to 800000 Rs. /Marla in 2013. In 1998 all these areas have almost the same residential land value i.e. ranges between 150000 Rs. /Marla to 200000 Rs. /Marla while from 2004 to 2011 the residential land value ranges between 250000 Rs. /Marla to 700000 Rs. /Marla. All these areas are the high-class residential areas of Bahawalpur City. These residential land values in these areas have been varied significantly as all the areas are part of high-class residential areas. However, the variation in their residential land values is due to their location and in terms of accessibility. The Model Town A that is located in the most peaceful area has the highest residential land values as compared to others that are slightly located in the congested areas.

Table 1: Land Values in High Class Residential Areas (1998-2013)

Year	Model Town A	Model Town B	Model Town C	Qasim Town	Welcome Colony
	Rs./Marla	Rs./Marla	Rs./Marla	Rs./Marla	Rs./Marla
1998-2003	300000	200000	150000	60000	150000
2004-2006	500000	250000	300000	100000	250000
2007	600000	400000	350000	200000	400000
2009	700000	500000	450000	225000	500000
2010	800000	600000	500000	250000	600000
2011	1000000	700000	600000	400000	700000
2013	1200000	800000	700000	500000	800000
Change in % 1998-2013	300	300	366	733	433

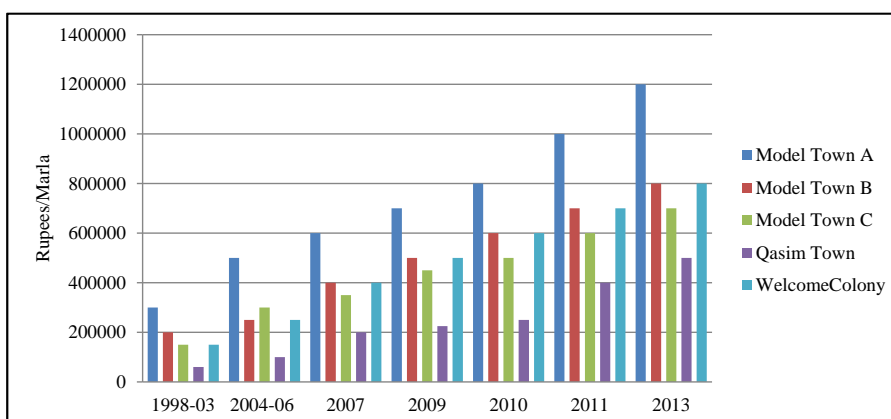**Source:** Field Survey, Author (2014)

Figure 5: Land Values in High-Class Residential Areas
Source: Author 2014

The residential land values in the middle class have also been changed considerably in the last 15 years. The residential land values in middle-class residential areas of Bahawalpur City from 1998 to 2013 are shown in the graph. In middle-class residential areas trust colony has the highest residential land values in 2013 i.e. 700000 Rs. /Marla. The other areas have

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residential land values, ranges between 380000 Rs. /Marla to 5000000 Rs. /Marla in 2013.

Table 2: Land Values in Middle-Class Residential Areas (1998-2013)

Year	Gulistan Col Rs. /Marla	One Unit Col Rs. /Marla	Trust Col Rs. /Marla	Balouch Col Rs. /Marla	Faisal Col Rs. /Marla
1998-2003	100000	100000	80000	110000	100000
2004-2006	160000	150000	100000	160000	160000
2007	200000	200000	200000	200000	200000
2009	300000	250000	250000	250000	300000
2010	325000	300000	300000	275000	340000
2011	400000	350000	400000	320000	350000
2013	450000	500000	500000	380000	410000
Change in % 1998-2013	350	400	525	245	310

Source: Field Survey, Author (2014)
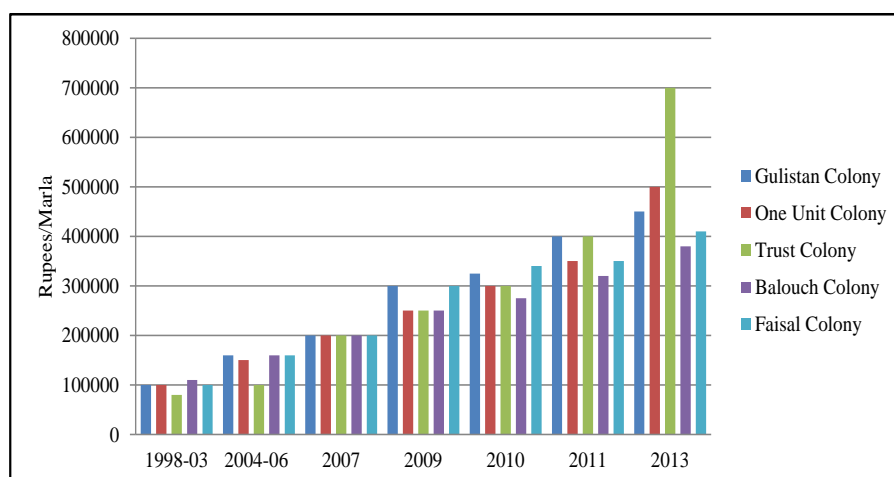
Figure 6: Land Values in Middle-Class Residential Areas
Source: Author 2014

In 1998 the land value of the Gulistan Colony was 100000 Rs. /Marla which gradually increased and reached up to 450000 Rs. /Marla in 2013. The land value of One Unit Colony in 1998 was also 100000 Rs. /Marla which increased up to 500000 Rs. /Marla in 2013. Balouch Colony was having the highest land value in 1998 which was 110000 Rs. /Marla and it has been reached to 380000 Rs. /Marla in 2013. The increase in land values of the Balouch colony was because it is located very near to the university chowk. Here it can be concluded that a sharp increase in Trust colony is just because that it is located at the most accessible point so that's why the land value of Trust Colony is much higher than the rest of the areas in 2013. The land value of One Unit colony also increased but comparatively, it is lesser than Trust Colony.
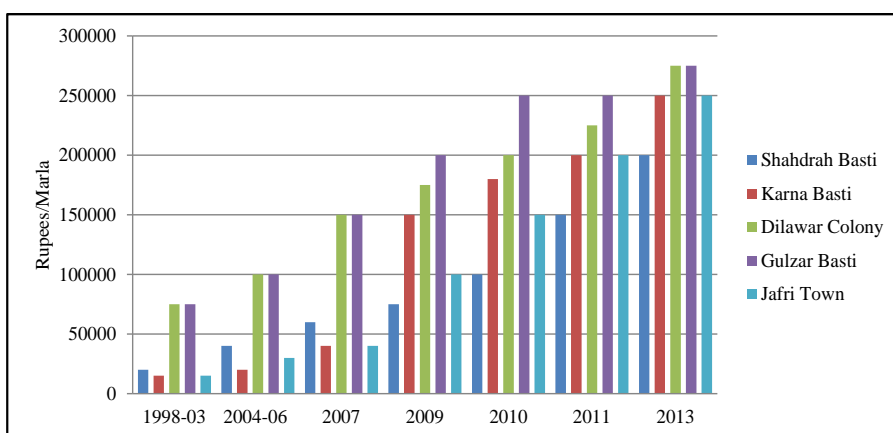

Figure 7: Land Values in Low-Class Residential Areas
Source: Author 2014

A remarkable increase can also be seen in the low-class residential areas of Bahawalpur City. The graph is showing a sharp increase in the land values of the Dilawar colony and Gulzar Basti. In 1998 the land value of Shahdra Basti was only 20000 Rs. /Marla which gradually increased and reached up to 200000 Rs. /Marla in 2013. The land value of Karna Basti in 1998 was 15000 Rs. /Marla which increased up to 250000 Rs. /Marla in 2013. Dilawar colony and Gulzar Basti was having the highest land value in 1998 which was 75000 Rs. /Marla and it has been reached to 275000 Rs. /Marla in 2013. The greater increase can be seen in the residential land values of Jafri town which were only 15000 Rs. /Marla in 1998 but it reached it peak in 2013 which was 250000. The increase in land values of low-class residential areas was because of the provision of the amenities by the Government like sewage systems and safe drinking water.

Table 3: Land Values in Low-Class Residential Areas (1998-2013)

Year	Shahdra	Karna	Dilawar	Gulzar	Jafri

	Basti	Basti	Colony	Basti	Town
	Rs. /Marla	Rs. /Marla	Rs. /Marla	Rs. /Marla	Rs. /Marla
1998-2003	20000	15000	75000	75000	15000
2004-2006	40000	20000	100000	100000	30000
2007	60000	40000	150000	150000	40000
2009	75000	150000	175000	200000	100000
2010	100000	180000	200000	250000	150000
2011	150000	200000	225000	250000	200000
2013	200000	250000	275000	275000	250000
Change in % 1998-2013	900	1566.66	266.66	266.66	1566.66

Source: Field Survey, Author (2014)

The land value of any area cannot be static at all. These variations in land values depend upon many factors like distance from the road, accessibility, population pressure, etc. In Bahawalpur, there is a constant increase in the residential land values of different areas as shown in Figure 5 below. The trend line shows that there is a constant increase in residential land values. From Figure 5 it is obvious that the residential land values are varying constantly for the last 15 years. Among these Model Town B has the highest residential land value in 2013 i.e. 800,000 Rs. /Marla. The main reason for the highest residential land value of Model Town B is its location. It is located in the high-class area and providing all the facilities to its inhabitants. It is also easily accessible from the main circular road. The streets are wide as compared to the other areas in the city. Among these residential areas Shahdra Basti has the lowest residential land value i.e. 200,000 Rs. /Marla in 2013 while the residential land values in the rest of the residential areas lie between the 250000 Rs. /Marla to 700000 Rs. /Marla from in 2013. These areas have seen the remarkable change in their morphology, the layout of streets, population pressure, and accessibility from 1998 to 2013.
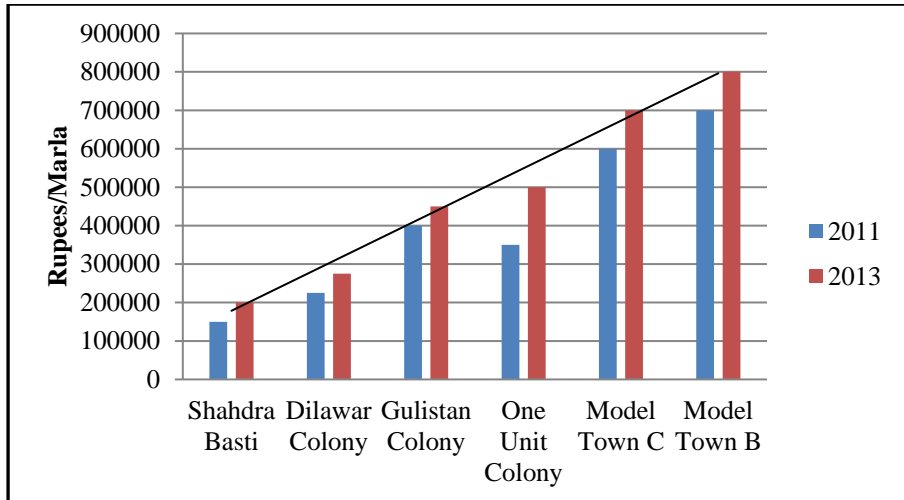
Figure 8: Variation in Residential Land Values
Source: Author 2014

Residential Structure and Pattern of Land Values

The residential structure of Bahawalpur City comprises high class, medium class, and low-class residential areas. High-class residential areas are located close to the city center while low-class residential areas are generally located in the peripheral part of the city. The medium class residential areas are located between the two. The land values of the residential areas differ following their location, amenities, and neighborhood characteristics. This is applicable within and also between the residential areas.
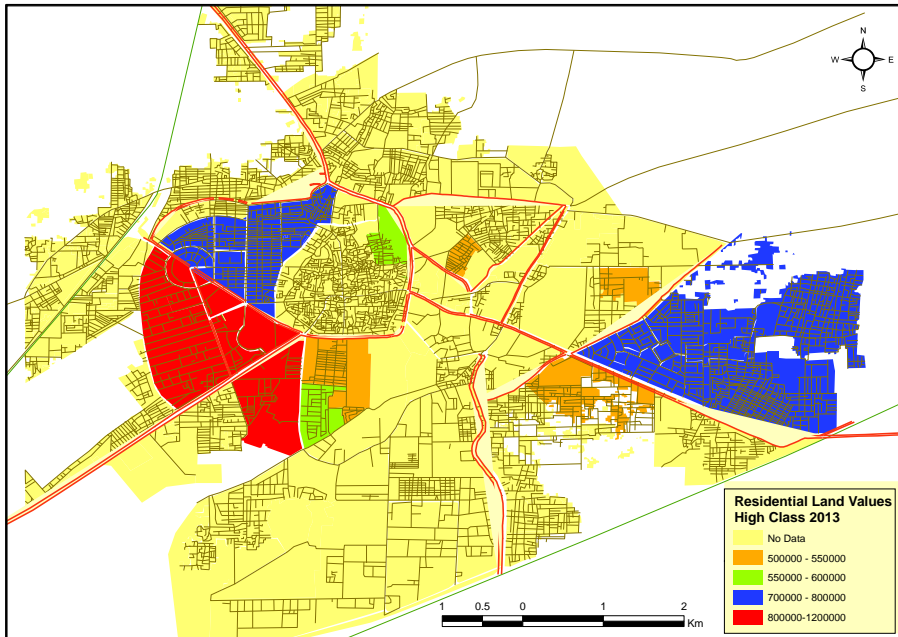
High-Class Residential Areas

Figure 9: Land Values in High-Class Residential Areas
Source: Author, 2014

High-class residential areas are located near to the city center. Model Town A, B, C, Hashmi Garden, Welcome Colony are high-class residential areas. These all areas have more than 600000 Rs. /Marla, in these areas mostly the elite class of Bahawalpur lives. Some of the Residential areas also have high land values because these are located at most accessible points like Muhalla Qureshian and Band Road. These areas also have more than 500000 Rs. /Marla. In this zone land values approaching almost 1200000 Rs. /Marla also in some areas.

Middle-Class Residential Areas

Medium class residential areas are located in Bahawalpur City between the high class and low-class residential areas. Some of the medium class residential areas are Bahawal Colony, Balouch Colony, Bihari Colony, Faisal Colony, Fauji Basti, Gulistan Colony, Habib Colony, Hamatiyan, Industrial Area Colony, Islami Colony, Jalwana Colony, Mahajir Colony, One Unit Colony and Nazir Colony. Some of the Muhallas of medium-class land values are Muhalla Baghmahi, Muhalla Islampura, Muhalla Kajalpura, and Muhalla Mubarikpura. Land values in the medium class residential areas are nearly half of those of high-class residential areas. In these areas land values ranges from 300000 Rs. /Marla to 480000 Rs. /Marla.

Low-Class Residential Areas

Low-class residential areas in Bahawalpur are generally located far away from the city centre. These areas are Karna Basti, Jafri Town, Gulzar Basti, and Dilawar Colony. Some of the low rent residential areas also found inside the main city like Muhalla Mir Siraj-ud-din, Muhalla Nawaban, Mushtaq Colony, Sadiq Colony, Shahdra Basti, and Maqbool Colony. Here
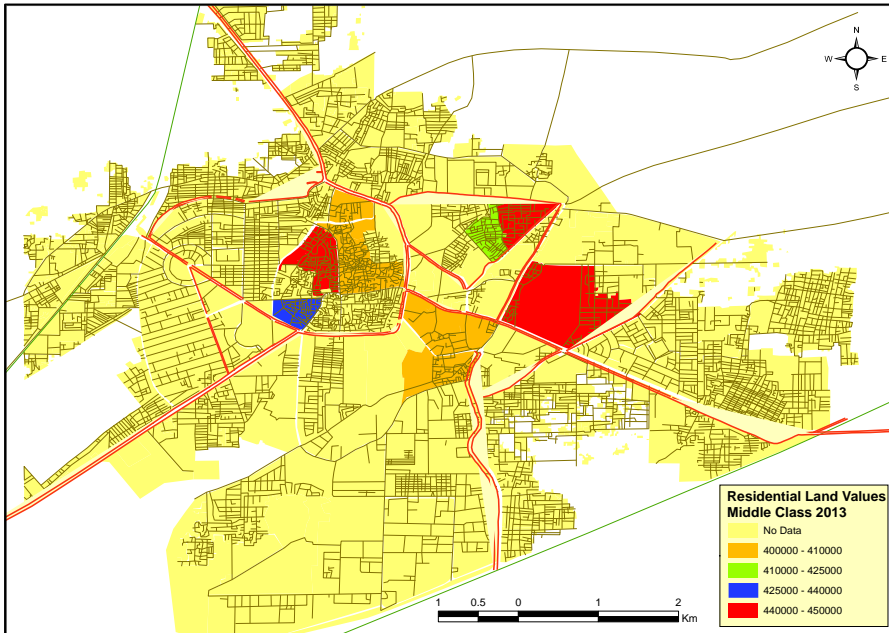

Figure 10: Land Values in Middle-Class Residential Areas
Source: Author 2014

the land values range from 150000 Rs. /Marla to 250000 Rs. /Marla. Land values are low because the physical condition of such areas is not good. Roads are narrow. Basic amenities like water, sewerage, etc. are not properly provided. The social environment is unsatisfactory and the rate of crime in these areas is higher. As a result, land values in these areas are low even in such areas which are located not far away from the city center. In some areas, land values are reaching 3 to 4 lac/ Marla also.
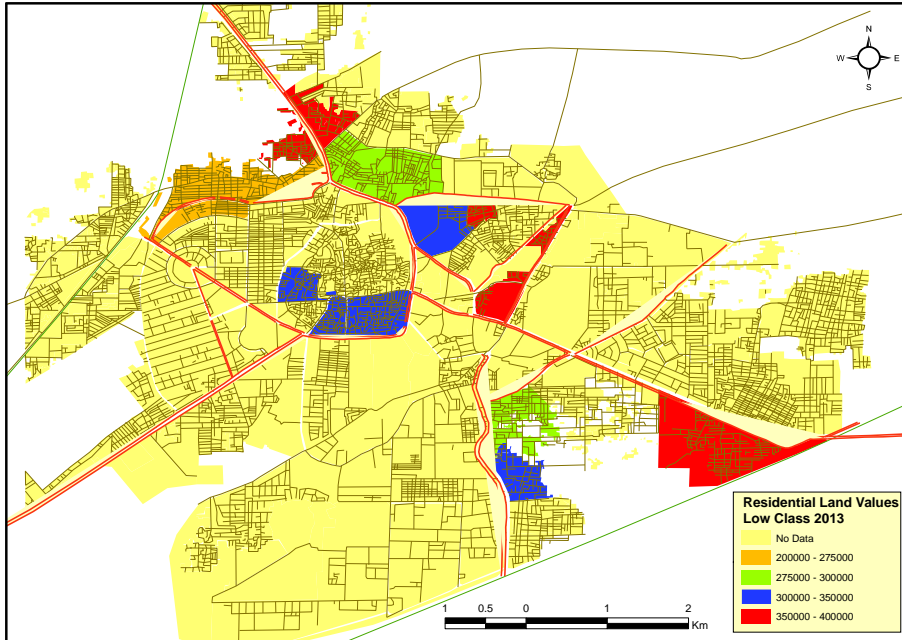
Figure 11: Land Values in Low-Class Residential Areas
Source: Author 2014

CONCLUSION

A remarkable increase can be seen in the residential land values of Bahawalpur City since 1998. As the city is growing, its agricultural land is turning into residential land. With the increase in residential land, there is a large variation in the land values of Bahawalpur City from place to place. But these land values within cities are not uniformly distributed. In Bahawalpur City, there is not a regular pattern of Residential land values. Residential Land values have a random pattern in Bahawalpur City. In general, we can say that land values decrease outward from the city center. Mostly high land value areas are located near the city center than next is the medium and low-class land value areas are at the periphery. But this situation is not happening in all the areas of Bahawalpur. High-class residential areas have the highest land values as these are the most peaceful and accessible areas of Bahawalpur which include Model Town A, Model Town B, etc. After this, there is a medium-class residential area which includes the Balouch colony, Faisal colony, Gulistan colony, etc. These areas have almost all the facilities and have higher land values but lesser than the high-class residential area. After the high and middle class, there is a low-class residential area that comprises Shahdra Basti, Gulzar Basti, and Dilawar colony, etc. In these areas, land values are much lesser as compared to high-class residential areas because in these areas the standard of living is not good and the facilities are not fulfilling the

requirements of inhabitants. There is another reason behind this i.e. distribution of land values has been changed from monocentric to polycentric. The city center is still the area where the highest land value is located. However, with the development of sub-centers change has taken place in the land values. Land values toward the sub-centers increase with increasing distance from the city center. E.g. land values in Satellite Town are highest as compared to many areas which are very close to the city center. It is because the satellite town has its sub-centers. So, we cannot apply any model or theory on Bahawalpur but partially e.g. Bid Rent Theory.

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